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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/677,723	10/01/2003	Susumu Shimotono	IBM1P050/JP920020150US1	4861
50535	7590	03/08/2005	EXAMINER	
ZILKA-KOTAB, PC P.O. BOX 721120 SAN JOSE, CA 95172-1120			MERCEDES, DISMERY E	
			ART UNIT	PAPER NUMBER
			2651	

DATE MAILED: 03/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/677,723

Applicant(s)

SHIMOTONO ET AL.

Examiner

Dismery E Mercedes

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10/01/2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9-12, 17-21 and 23-27 is/are allowed.
- 6) ☒ Claim(s) 1-8, 13, 18, 22 and 28 is/are rejected.
- 7) ☒ Claim(s) 14-16 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement (IDS) submitted on 10/01/2003 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-8,28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kasiraj et al. (US 5,777,815) in view of Ishiyama et al. (US 2003/0067705 A1).

Kasiraj et al. discloses a magnetic disk protection mechanism, comprising: an information acquisition mechanism for acquiring information about an environmental change of a magnetic disk device (abstract); a shock prediction mechanism for analyzing the information acquired by said information acquisition mechanism together with a history thereof, and for determining a status of where said magnetic disk device is used, so as to perform a shock prediction (col.5, 66-67 and col.6, lines 18-40).

Kasiraj et al. fails to particularly disclose a control mechanism for controlling operations of said magnetic disk device including a magnetic head escape operation based on a prediction result by said shock prediction mechanism.

However, Ishiyama et al. discloses a control mechanism for controlling operations of said magnetic disk device including a magnetic head escape operation based on a shock detection (abstract & page 3, ¶0045 and page 4, ¶0075). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to implement a mechanism as disclosed by Ishiyama et al. into Kasiraj et al. mechanism, the motivation being because it would provide Kasiraj's mechanism with the enhanced capability of determining whether or not a head needs to be retracted based on dynamic acceleration signals corresponding to a shock (page 1, ¶0011, lines 9-10 of Ishiyama et al.).

As to Claim 2, Ishiyama et al. further discloses a variation in the status where said magnetic disk device is used falls within a specified range for a specified period, said shock prediction mechanism does not predict that a shock will be caused by the variation in the status (page 4, ¶0067).

As to Claim 3, Ishiyama et al. further discloses if the status of where said magnetic disk device is used varies in a predetermined pattern, said shock prediction mechanism predicts that a shock will be caused by the variation in the status (page 4, ¶0064 & ¶0073-0074).

As to Claim 4, in the obvious combination, supra, Kasiraj et al. further discloses shock prediction mechanism predicts a shock with reference to a history of input operations provided by a predetermined input device (col.6, lines 18-46).

As to Claim 5, Ishiyama et al. further discloses information acquiring mechanism acquires information on acceleration of said magnetic disk device, and said shock prediction mechanism recognizes the status where the magnetic disk device is used based on the acceleration information acquired by said information acquiring mechanism (abstract).

As to Claim 6, Ishiyama et al. further discloses if said shock prediction mechanism determines that said magnetic disk device is stable, the shock prediction mechanism notifies said control mechanism that said magnetic disk device is stable, and said control mechanism returns said escaping magnetic head in response to said notification (page 4, ¶0067).

As to Claim 7, Ishiyama et al. further discloses a mechanism adaptively determines whether or not said magnetic disk device is stable, based on a history of the information acquired by said information acquiring mechanism before a shock is predicted to occur (page 4, ¶0067-0070, 0075).

As to Claim 8, Ishiyama et al. further discloses if said magnetic head has escaped, said control mechanism holds a new access request to the magnetic disk device in an internal queue instead of realizing the access request until said shock prediction mechanism determines that said magnetic disk device is stable (page 4, ¶0064, lines 7-9).

As to Claim 28, is drawn to the method of using the corresponding apparatus claimed in claim 1, and therefore is rejected for the same reasons of obviousness as discussed supra.

4. Claim 13 is rejected as being unpatentable over Mitsuhiro (JP 2003-263853) in view of Kasiraj et al. (US 5,777,815).

Mitsuhiro discloses a magnetic disk protection mechanism, comprising: a shock prediction mechanism for predicting a possible shock to a magnetic disk device (abstract), a control mechanism for controlling operations of said magnetic disk device including a magnetic head escape operation based on a prediction result by said shock prediction mechanism (abstract, page 2, ¶0012-0013); a diagnosis mechanism for operating if a shock actually occurs after said control mechanism has started causing a magnetic head to escape, to determine whether or not the magnetic head has escaped before the occurrence of the shock (abstract, page 2, ¶0012-0013).

Mitsuhiro fails to particularly disclose a shock prediction based on a variation in at least one physical parameter of an environment of the magnetic disk device. However, Kasiraj et al. discloses such (on abstract). Therefore, it would have been obvious to one of ordinary skill at the time of invention to implement Kasiraj technique into Mitsuhiro's mechanism the motivation being because as Kasiraj et al. teaches shock causes fluctuations in the head temperature due to cooling of the heated head by the disk, thus providing a threshold to determine whether or not to inhibit writing of data (col.3, lines 5-13 of Kasiraj et al.).

5. Claim 22 is rejected as being unpatentable over Mitsuhiro (JP 2003-263853).

Mitsuhiro discloses a magnetic disk protection method of protecting a magnetic disk by using a sensor to determine a status where a magnetic disk device is used and by having a magnetic head escape depending on a determination result, said magnetic disk protection method comprising: accumulating information histories acquired by said sensor, analyzing the accumulated histories and the latest said information to recognize a change pattern of said magnetic disk device status, and based on a content of said change of said magnetic disk device status, executing a magnetic head escape operation when a shock to said magnetic disk device is predicted (abstract, page 2, page 2, ¶¶0012-0013 & 0015-0016).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to implement a hard disk drive as disclosed by Mitsuhiro the motivation being because as Mitsuhiro teaches it allows to evacuate a head before a collision (shock) and so prevention of data loss or damage to the head can be obtained (page 4, 0028 of Mitsuhiro).

Allowable Subject Matter

6. Claims 9-12, 17-19, 20-21, 23-25, 26-27 are allowed.

Claims 9 is allowable over Prior Art of Record, since the cited references taken alone or in combination do not teach or suggest said status determination mechanism determines that there is a high probability of excessive shock to said magnetic disk device, said control mechanism divides an access request to said magnetic disk divides into access requests with a small data size per access and transmits the access request to said magnetic disk device.

Claim 17 is allowable over Prior Art of Record, since the cited references taken alone or in combination do not teach or suggest a shock manager for analyzing acceleration information acquired by said acceleration sensor and a history thereof, to predict a probability of shock to said magnetic disk device.

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Claim 20 and 23 are allowable over Prior Art of Record, since the cited references taken alone or in combination do not teach or suggest a driver for dividing an access request to said magnetic disk device into access requests with a small data size per access and for transmitting to said magnetic disk device when said shock manager finds a high possibility of excessive shock to said magnetic disk device.

Claim 26 is allowable over Prior Art of Record, since the cited references taken alone or in combination do not teach or suggest a shock actually occurs after a magnetic head has started escaping, determining whether or not the magnetic head escape has been completed before the occurrence of the shock, by comparing a pre-shock period, that is a time from a start of an escape operation of the magnetic head until the occurrence of a shock, with an already measured and restored escape time required for the escape operation of the magnetic head.

7. Claims 14-16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Schaefer et al. (US 6,046,871) discloses a magnetic recording head slider with piezoelectric sensor for measuring slider to disc interference levels.
- Codilian (US 6,714,371 B1) discloses method and disk drive for shock estimation and write termination control.
- Carlson et al. (US 6,018,431) discloses a disk drive with shock evaluator.

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- Serrano et al. (US 6,429,990 B2) discloses a method and apparatus for controlling write operations of a data storage system subjected to a shock event.
- Uchiike et al. (6,236,527 B1) discloses a disk drive with actuator load/unload controller.


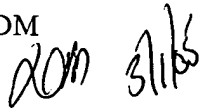
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dismery E Mercedes whose telephone number is 703-306-4082. The examiner can normally be reached on Monday - Friday, from 9:00am - 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Hudspeth can be reached on 703-305-4040. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Dismery E Mercedes
Examiner
Art Unit 2651

DM



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